

**Testimony of Michael S. Kelly**  
**Before the United States Senate Committee on**  
**Commerce, Science, and Transportation**  
**5 March 1998**

I have been asked to testify on the existing policies and laws governing the commercialization of space, the importance to the Nation of the industries these policies support, and the impact of future jobs, new technologies and economic growth for the Nation this industry will have.

First, let me say that the commercialization of space involves *two* broad categories of industry. One is use of space as a place to do business, and the other is that of providing transportation between the Earth and space. The latter is my company's primary focus at this time, and my remarks are directed at the policies affecting space transportation.

I must, however, say something about the space as a place to do business. Space is like any other unexplored and untapped territory, only more so. There are literally whole new worlds within our reach, and in between is a tract of real estate whose extent is beyond comprehension.

Real estate and natural resources are the stuff of economic activity. Since the territory of space puts essentially infinite amounts of both at our disposal, one would expect that space would be the most important sector of human action. You have asked what the impact of space on jobs, technology, and economic growth would be, and probably expect an answer in terms of percent of GDP. It should take only a moment's reflection to realize that the ultimate impact will be in *multiples* of GDP, and large multiples at that. Yet in the first 40 years of the Space Age, the only commercial use of space has been as a place to locate communications relay stations. How can this be?

The answer lies in our approach to space transportation, an approach that evolved solely to serve the purposes of fighting the Cold War. Our objective in the theater of space was to demonstrate superiority over the Soviet Union. There was no economic incentive involved in going to the moon. Merely doing it demonstrated our technical prowess, and the Soviets' efforts to keep up contributed to their economic decline and eventual downfall.

The transportation method we devised for this purpose was developed in an atmosphere of urgency, using the only approach we knew would work – scaling up of large ballistic missiles. Cost, convenience, and other attributes of a *commercial* transportation system were not considered, because they were not an important part of the objective. The result was an extremely expensive, inconvenient space transportation system. Any commercial use would have to be fantastically remunerative. Only one such use has ever been found, in the form of telecommunications satellites and satellite constellations.

Because it was a wartime activity, government took all the risk and paid all the bills for the space program. This was appropriate. The government always assumes the cost and risk for developing things that meet its unique requirements. But in the early 1980s, it was clear that *commercial* space had a future. In a well-intentioned effort to spawn a commercial launch industry, the government *gave* the rights to sell commercial launch services to the companies that manufactured government-developed launch vehicles. In other words, all of the development cost for our existing space transportation system – billions of dollars – was *given* to those companies.

The communications satellite industry could afford the cost of this transportation, and provided a large (and still growing) base of business for launch companies. Since they had no investment to recoup, and had a steady base of business, launch companies had no incentive to develop a space transportation system with broader commercial applicability. In the words of one aerospace executive, “Why would I invest my own money to develop a cheap launch vehicle when I can already sell all the expensive launch vehicles I can build?”

That is perfectly sound business reasoning, and it dictates a completely correct course of action – or inaction. But as long as no one develops a more commercially viable space transportation system, the vast tract of real estate beyond our planet will forever remain virtually unused.

There are those of us who recognize the unlimited economic opportunities of space, and are seeking a better way to get there. However, our efforts are being hampered by a continuation of the same mistaken national policy that has locked us in to the current approach to space transportation.

By funding programs such as the Evolved Expendable Launch Vehicle (EELV), and threatening to fund a commercial Venture Star, the government is actually impeding progress in the commercial launch industry. EELV is merely an update of a commercially non-viable approach to space transportation. There is a limit to how cheaply one can build a high-performance rocket, and that limit is not very far below what we have already achieved. The EELV program will spend billions to realize this modest saving. If those billions in development cost are taken into account, it is clear that EELV will *increase* the cost of space transportation.

Venture Star, while conceptually attractive as a commercial vehicle is, in my opinion, beyond us technologically. While a single-stage vehicle will eventually be developed, the existing and projected launch markets cannot justify the amount of money that has to be spent to get there in one giant step. I do not believe that any private company will be able to raise the capital required to do it. But a private company might talk the government into footing the bill. That mode of capitalization is the most attractive to the mainstream aerospace industry, since it never has to be repaid.

The private capital markets perceive EELV and Venture Star as government-funded

competitors to any private launch venture. That dries up investment capital for companies such as Kelly Space & Technology, Kistler, Rotary Rocket, Pioneer Rocketplane, and others. If the United States is serious about fostering a commercial space industry, it should not repeat the mistakes of the past.

The government should not fund development of a new launch vehicle if it is to be used for commercial purposes. In the private sector, people who want to compete in a market have to take their own risks. If the major aerospace companies believe that they need new vehicles for commercial space transportation – as their customers are telling them they do – let them raise the capital to do it. My company, along with others in the “emerging” launch category, is fighting a hard enough battle to raise the kind of investment needed for our projects. We don’t need the government competing with us, especially using our own tax dollars.

Outside of this issue, the national policy on space commercialization is evolving in a very positive manner. A regulatory framework, designed primarily for public safety and protection of property, is being built by the FAA’s Office of the Associate Administrator for Commercial Space Transportation (AST). Under the exemplary leadership of Ms. Patricia G. Smith, AST is working with the whole industry in a commendable manner. In order to establish a coherent framework in which to do business, AST should be empowered to make the rules dealing with all aspects of space transportation. An important part of this empowerment is jurisdiction over reentry licensing. This issue, along with many others beneficial to space commercialization, is addressed in HR-1702. KST supports passage of this legislation as soon as possible.

NASA, the original leader of the Space Age, is trying its best to accommodate the emerging commercial launch industry. Its best efforts have been in the area of new technology demonstration, including the X-33, X-34, and even Kelly Space & Technology’s tow launch technique. In this mode of operation, NASA makes its considerable resources available to industry on a level-playing field basis. Beyond that, however, NASA is still trying to define a proper role for itself in the post Cold War world. I believe that it has a role, specifically that of “expansion of the territories.” By continuing its exploration of the solar system, NASA will blaze the trail for the commerce of the heavens, much the way that the Lewis and Clark expedition opened up our continent. There could be no better leader for this than Mr. Daniel Goldin. I’ve known Mr. Goldin for many years, and his abilities and his vision are exactly what NASA needs to maintain our leadership in space.

I have restricted my comments to areas within the purview of this Committee. There are other policies that influence the progress of commercial space far more profoundly than any I have discussed here. Some have suggested that tax policy be changed to encourage investment in space industries. I personally disagree with the use of tax policy for economic engineering, other than in the broad sense of encouraging investment as such. To that end, I support an end to the capital gains tax. But there is a much deeper problem in America, and that is the manner in which we regulate investment and securities. My

growing familiarity with this field has lead me to conclude that a wholesale reform of securities laws is needed.

That discussion is far more complex than could be undertaken in this testimony, even in written form. And, as I indicated earlier, it is not within the purview of this Committee. I would be willing to discuss that topic by itself in any future hearings, but mention it here only because it is the single most significant issue faced by my industry.

The first decade of the new millennium promises to be the most exciting – in a positive sense – of any in human history, largely because of the advances that will be made in commercial space. I am proud to be a part of that, and I thank the Committee for its interest, and for this opportunity to speak.